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BRADYCROTE TREATMENT
OF
YELLOW FEVER,
BY
VERATRUM VIRIDE
AND
GELSEMINUM SEMPERVIRENS.

CHARLESTON, Oct. 22nd, 1858.

Mr. Editor,—In accordance with an intention publicly announced by us at an early period of the season, when incomplete trial had not yet furnished us with the details contained in this paper, we send you for publication a succinct analysis of the cases of yellow fever which have been treated by us in this epidemic with veratrum viride and gelseminum sempervirens. The fatality of the disease, in general, *and especially during this season in Charleston*, was, of course, the cause of our distrust in received modes of practice, and we hoped to find among untried remedies some one upon which a complete reliance could be placed. Dr. Ford proposed as a plan of treatment in the first place, as speedily as was possible and prudent, to reduce the frequency and volume of the pulse, at the febrile onset, to a range ten beats or more below that peculiar to each individual treated; and in the second place, to maintain it fifteen or twenty beats below the same standard, according to the intensity of the access and the subsequent symptoms. In this way he hoped to arrest the fever after a few hours, and to prevent its return in any notable manner; from the catalogue of drugs which lower the heart's action, selecting the veratrum viride on account of its remarkable certainty, promptness, and freedom

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from injurious qualities. Soon after the outbreak of the epidemic, therefore, we employed "Norwood's Tincture," which was chosen on account of its uniformity and concentration, as promising best to fulfil these indications; but in view of a state so peculiar as the reduction of the symptoms of this violent disease, we were somewhat at a loss concerning the concurrent and subsequent measures to be adopted, and the progress of the epidemic was alone able to afford us an adequate experience concerning the remedial agents most required or best admissible in this *slow pulse* treatment.

The system, therefore, upon which we decided, was briefly as follows:

1st. In adults, when the bowels had not been moved for some days, a saline cathartic was given, and if the headache was intense, five or six evacuations were procured. If the bowels had been tolerably regular or loose, and in delicate women and children, we gave an efficient dose of calomel, alone or combined with some other gentle purgative.

2d. As early as possible after the administration of the cathartic, and often during its action, we began with the veratrum for the primary reduction of the pulse, which was always effected within seven hours. To this end we prescribed five successive doses, the first four of which were given every hour, and the last from an hour and a half to two hours afterwards, irrespectively of age or sex. The tincture was administered without combination, mixed in a little water, for adult males in doses of from 8 to 10 drops; (=4 or 5 minims;) for women, from 6 to 8 drops; for children, between seven and fourteen years, from 4 to 6 drops; for those between three and seven years, from 3 to 5 drops; and for all under two years, 1 or 2 drops. The size of the doses was moreover regulated by the intensity of the symptoms, by temperament, irritability of stomach, and the previous duration of the disease. By the administration of veratrum in this manner, the pulse was sooner or later subdued, and as it sank, became somewhat irregular. The first doses of veratrum were often vomited in severe cases, but the succeeding ones were commonly retained, and the patient did not again vomit until the pulse was reduced, when the effect of the remedy was occasionally marked by emesis. This vomiting was rarely severe, ceasing of itself upon a temporary discontinuance of the medicine, or yielding readily to common restoratives. The reduction of the pulse was accompanied by a notable cooling of the body, by a well marked diminution of the headache, pain in the back and limbs, of the restlessness and anxiety, of the frequency of

respiration, of the congestion of the skin, flushing of the face, tumefaction of the tongue, and injection of the conjunctiva. The patient felt much relieved, and slept tranquilly as soon as the vomiting had ceased; nor did the symptoms tend to recur for some hours, as they would always do, however, if the drug were not again prescribed.

While, therefore, the patient was in this condition, the concurrent treatment was at once instituted. It consisted—

3d. *a.* In a continued exhibition of the veratrum, by which the pulse was maintained throughout the disease, and until the tongue began to clean, fifteen beats or more below its natural range. To effect this, repeated doses half as large as those first given, but not unfrequently quite as large, or nearly so, were administered every second or third hour, suspended while the pulse was low, but promptly resumed as soon as it showed an upward tendency by a rise of ten beats or more. The patient was therefore seen every six hours, and much more frequently in urgent cases, for it was easy to control the pulse when once reduced, difficult to reduce it a second or third time when by neglect it had risen beyond one hundred beats per minute. Careful watching was important, from the consideration that every such rising of the pulse, tending to a complete reëstablishment of the fever in a weakened condition, was regarded as fully as dangerous as a second or third paroxysm in bilious remittent fever. If the pulse was small and frequent, the veratrum was administered in small and frequent doses. If diarrhœa occurred, as it rarely did, it was restrained by mild counter-irritants and astringents, but the veratrum was on no account suspended, and the pulse was continuously influenced by small but adequate doses. If black vomit supervened and the pulse was slow, the veratrum was plainly not required; if, however, the pulse was rapid, the veratrum was continued in doses proportioned to its frequency, which were usually small, and were repeated every two or three hours. Without regard, therefore, to the ordinary accidents of the disease, whenever it was required, and only then, the veratrum was uniformly or specially administered until convalescence was declared.

b. In mercurialization, which was invariably attempted, calomel, and in some cases hydrarg. cum. creta. was pushed in moderate doses without delay, as soon as catharsis had been effected. The mercurial was discontinued when the gums were plainly touched.

c. In the administration of a saline, diuretic and refrigerant mixture, specially directed towards the kidneys as soon as the intensity of the symptoms had been subdued.

In pregnant women the veratrum was administered as usual, but in doses so regulated as to avoid, if possible, any vomiting, the pulse being nevertheless controlled. If symptoms of abortion had already set in, and during the first three days of the disease, they were in every case effectually arrested, and sometimes did not again recur; but after this period, if a general internal and external congestion had supervened—if the pulse had become quick and *very small*, and if the contractile efforts of the uterus were reëstablished, as well as in cases seen late where they first presented themselves towards the termination of the disease—it was deemed injudicious to continue the veratrum, death, in such cases, having ensued after a short time. We have, therefore, observed that in non-vomitive, but bradycrotic doses, the veratrum, in this disease, has appeared to possess anti-parturient properties.

During convalescence, quinine, sulph. acid and iron were conjointly prescribed. Quinine was strictly avoided in the commencement and progress of the disease. Narcotics of every description were absolutely discarded, or only administered in moderation, when convalescence was fully established. Laxatives were given by the mouth, if deemed requisite, at any period of the disease, but per anum during black vomit. Blisters were rarely required; sinapisms were of advantage in aiding the retention of the veratrum when first administered, or when resorted to in consequence of a rise in the pulse; and they were otherwise variously applied as in ordinary treatment. Strict abstinence was enjoined throughout the febrile stage. Stimulants were prescribed in very small quantities, and were rarely required, the veratrum being discontinued or alternated with them. Convalescence was almost invariably prompt and uncomplicated. Relapses occurred in but two cases, in both of which quinine had been omitted during convalescence. Careful notes were taken at the bedside, and at each visit, from which the following numbers have been evolved. Patients under fourteen years of age were classed as children. Total number treated by veratrum, 117: recovered, 102; died, 15. Adults, 80: recovered 66; died 14. Children, 37: recovered, 36; died, 1.

	MALES.		FEMALES.	
	Recovered.	Died.	Recovered.	Died.
White Adults.....	34	5	27	9
Colored Adults.....	4	0	1	0
White Children	12	1	18	0
Colored Children.....	4	0	2	0

Natives of Charleston, 26; United States, 9; England, 7; Scotland, 3; Ireland, 62; Germany, 10. Total, 117.

The first case was treated with *veratrum viride* on August 17th. The subjoined table shows the mean ranges of the pulse under the *veratrum viride*, as compared with its mean range before the *veratrum viride* was given.

Mean frequency of Pulse.	ADULT MALES.	ADULT FEMALES.	CHILDREN.
	Beats per Min.	Beats per Min.	Beats pr Min.
When v. v. first given	102.5	114.2	137.5
Seven hours after....	61.3	65.2	71
Remainder of disease	52.8	64.7	74.8

Of the whole number of cases treated, 28 vomited black vomit, of which—

	MALE ADULTS.	FEMALE ADULTS.	CHILDREN.	RESULT.
Recovered...	2	2	12	16
Died.....	4	7	1	12
Total.....	6	9	13	28

Of the whole number treated, 38 passed black vomit downwards; of which 12 died, and 26 recovered.

Cephalic congestion occurred in 18 cases—3 adult males recovered and 4 died—1 adult female recovered and 6 died—3 children recovered and 1 died.—11 died and 7 recovered.

Ptyalism was complete in 84, which all recovered.

Ptyalism was incomplete in 33, of which 14 died and 19 recovered.

Blisters were applied in 8 cases, of which 7 died and 1 recovered.

Hæmorrhages from mouth, nose, urinary passages or blistered surfaces occurred in 6 cases, of which 5 recovered and 1 died. Notable diarrhœa occurred in 9 cases, of which 6 recovered and 3 died.

Suppression of urine was observed in 13 cases, all of which died. The whole number of pregnant women was 8—4 recovered and 4 died. 5 pregnant women aborted during the disease—4 died and 1 recovered. 3 pregnant women did not abort during the disease, all of which recovered. The cases were equally fatal in all stages of pregnancy—2 women aborted on the fifth day; 1 on the sixth, 1 on the eighth; and 1 on the tenth day.

One child was born and is alive, whose mother died with black vomit. 3 aborting women had notable uterine hæmorrhage, 2 died and 1 recovered.

Average duration of treatment was for	ADULT MALES.	ADULT FEMALES.	CHILDREN.
	Days.	Days.	Days.
	6	7	5.3

The tongue began to clean early, was not significant of gastric irritation, nor did it show any marked tendency to dryness attributable to the veratrum.

Jaundice supervened in 12 cases, of which 7 recovered and 5 died.

In view of the results obtained from a reduction of the pulse, in the treatment of the fever as observed under the veratrum, and in order to contrast with this drug another remedy possessing similar powers, at the suggestion of Dr. White, we also used in the present epidemic the tincture of gelseminum sempervirens, which was prepared after the following formula: **R.** Rad gelsem semp ʒiv. alcohol (95 per cent.) Aq. com; āā ʒvii. M. And digest 14 days, then filter. The initial doses of this tincture were, for adults, from 20 to 30 drops—and for children, from 5 to 20 drops, every hour for the first four hours, and as with the veratrum the secondary doses were half as large.

Certain cases which had been seen late, or were characterized by notable irritability of the stomach, as also some which showed no special malignity were treated by this agent with marked advantage; upon whose employment Dr. White decided in consequence of the statements of Dr. Cleveland, of Cincinnati, and of Dr. Mayes, of South Carolina, in this journal, concerning its influence upon the pulse and freedom from irritant properties, etc. From notes taken upon cases thus treated, we have deduced the following numbers:

Total number treated with gelseminum sempervirens, 24; all of which recovered. Of these, 15 were males and 9 females. Adults, 12, and children, 12; whites, 22, and blacks, 2; natives of Charleston, 10; S. Carolina, 5; Ireland, 7; Germany, 2.

Av. Frequency of Pulse.	ADULT MALES.	ADULT FEMALES.	CHILDREN.
	Beats per Min.	Beats per Min.	Beats pr Min.
When first given.....	112.4	101.3	122.2
12 hours afterwards.	55.4	54.6	70.9

Of the whole number treated, 2 vomited black vomit, 5 passed black vomit downwards. In 3 cases hæmorrhage occurred from tongue, gums or nasal passages.

One woman was in the sixth month of her pregnancy, and did not abort.

Av. Duration of Treatment	ADULT MALES.	ADULT FEMALES.	CHILDREN.
	Days.	Days.	Days.
For.....	7.2	9.3	8.5

No marked prostration was caused by this remedy. The pulse being, however, much less quickly reduced than by the veratrum. In few cases was the heart's action fully lowered in less than 12 hours, and it was well controlled throughout the rest of the disease in the majority of cases. The concurrent treatment was the same as with the veratrum. Mercurialization was complete in 10 cases; incomplete in 14 cases. In a few instances, a marked redness of the tongue was observed, a condition that was not distinctly noticed during the administration of the veratrum. The gelseminum appeared to produce a general calming influence even during the early period of its administration, but was not found to possess any marked narcotic properties. It seemed, also, to promote the action of the kidneys, and during its use only, in several cases, an erythema of the skin was noticed. This drug appeared to influence the volume of the pulse before it affected its frequency, and in most cases for the rest of the disease to control both conditions in an equal manner—emesis was not observed to ensue upon the administration of this medicine; the gastric irritability peculiar to the disease being moreover to all appearance favorably influenced.

The total number of cases of yellow fever treated with a slow pulse by the veratrum viride and gelseminum semper-virens, was conjointly 141, of which 15 died and 124 recovered.

Total number of cases treated by ordinary methods were 6, of which 3 recovered and 3 died. These vomited black vomit and died. One was a pregnant woman in her seventh month, who died without aborting.

In conclusion, we beg leave to remark, that the confidence with which we were inspired by the use of these drugs in the commencement of the epidemic has continued unabated; that we still continue to use them, and intend to do so again, should our city be unfortunately revisited by this obdurate and calamitous disease. With apologies for the length and statistical nature of this communication, we remain, respectfully yours,

OCTAVIUS A. WHITE, M.D.
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